

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant : Onoue Sei-ichi et al.  
Appl. No. : 10/596,590  
Filed : Jun 16<sup>th</sup>, 2006  
For : Aqueous Coating Composition  
Examiner : Karuna P. Reddy  
Group Art Unit : 1796  
Confirmation No. : 8151

**4th DECLARATION UNDER 37 C.F.R §1.132****Mail Stop Amendment**

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Dear Sir:

I, Seiichi Onoue declares and states that:

1. I am a co-inventor of the above identified patent application and familiar with the specification and prosecution history.
2. I received a Master Degree in Engineering in 1999 from the KINKI University.
3. Since 1999, I have been employed by SK KAKEN CO. LTD, and working as an engineer for 9 years.
4. I have prepared Example 1-8 and 1-9 at pH 7.6 in the same manner as Example 1-3, described in the present application except the amount of Anti staining agent is as shown in the attached Table 1. Table 1 is provided in identical format to Table-1 of the specification. I have also prepared Example 1-10 to 1-12 at pH 6.5, and Example 1-13 to 1-15 at pH 7.0 using anti staining agent N and P as described in Table 1.

Evaluation tests were conducted in accordance with the description in the present specification under the heading "Test Example 1" and the results are presented in the attached Table 2. The previously presented results are also included for comparison. As

shown in Table 2, if the pH of the colloidal silica is slightly outside the claimed range of 5-7.8, the samples provide lower resistance to rain streaking and efflorescence resistance as shown in Comparative Examples 1-4 (pH 8.0) and 1-6 (pH 4.5). On the other hand, newly submitted Examples 1-10 to 1-12 and Example 1-13 to 1-15, whose pH value is 6.5 and 7.0 respectively, indicates excellent properties. These results along with the previously presented results from Example 1-1 to 1-7 whose pH is 7.6 and 7.8 prove a criticality of the claimed range.

As for the ratio of solid content, the data from the newly submitted Example 1-8 to 1-9, along with Example 1-3, Examples 1-10 to 1-12, and Examples 1-13 to 1-15 show that different ratios of solid content within the claimed range all provide similar excellent results.

5. I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful, false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or patent issuing therefrom.

Dated: October, 27, 2009

By: Seiichi Onoue  
Seiichi Onoue

Table-1

	Example 1-8	Example 1-9	Example 1-10	Example 1-11	Example 1-12	Example 1-13	Example 1-14	Example 1-15
Emulsion A	200 (100)	200 (100)	200 (100)	200 (100)	200 (100)	200 (100)	200 (100)	200 (100)
Coloring pigment	96	96	96	96	96	96	96	96
Dispersant A	2	2	2	2	2	2	2	2
Dispersant B	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Film forming assistant	18	18	18	18	18	18	18	18
Thickener	3	3	3	3	3	3	3	3
Defoaming agent	3	3	3	3	3	3	3	3
Anti-staining agent A	-	-	-	-	-	-	-	-
Anti-staining agent B	-	-	-	-	-	-	-	-
Anti-staining agent C	5(1)	150(30)	-	-	-	-	-	-
Anti-staining agent D	-	-	-	-	-	-	-	-
Anti-staining agent E	-	-	-	-	-	-	-	-
Anti-staining agent F	-	-	-	-	-	-	-	-
Anti-staining agent G	-	-	-	-	-	-	-	-
Anti-staining agent H	-	-	-	-	-	-	-	-
Anti-staining agent I	-	-	-	-	-	-	-	-
Anti-staining agent J	-	-	-	-	-	-	-	-
Anti-staining agent K	-	-	-	-	-	-	-	-
Anti-staining agent L	-	-	-	-	-	-	-	-
Anti-staining agent M	-	-	-	-	-	-	-	-
Anti-staining agent N	-	-	50(10)	5(1)	150(30)	-	-	-
Anti-staining agent O	-	-	-	-	-	-	-	-
Anti-staining agent P	-	-	-	-	-	50(10)	5(1)	150(30)
Catalyst	-	-	-	-	-	-	-	-

Anti-staining agent N: To a reaction vessel equipped with a reflux condenser and stirring blades, 500 parts by weight of the Anti-staining agent M was added. Thereafter, 1.0 part by weight of tetramethoxysilane was gradually added dropwise to the resulting mixture with stirring. Then, the temperature was raised to 80°C and stirring was continued for 24 hours. Thereafter, the mixture was left standing still to cool to room temperature to give the Anti-staining agent N.

Table 2

	Example 1-1	Example 1-2	Example 1-3	Example 1-4	Example 1-5	Example 1-6	Example 1-7	Compa native Example 1-1	Compa native Example 1-2	Compa native Example 1-3	Compa native Example 1-4	Compa native Example 1-5
Storage stability	o	o	o	o	o	o	o	o	o	x	x	o
Specular gloss	84	85	84	84	83	85	84	85	75	62	73	65
Tack free time (hr)	8	8	8	8	8	8	8	8	8	48	8	8
Area of dropped water stream (cm <sup>2</sup> )	14	28	18	24	33	30	35	8	13	12	14	10
Pollution resistance to rain streaking	3	5	5	5	5	5	5	1	2	2	2	2
Efflorescence Resistance	o	o	o	o	o	o	o	o	x	o	x	x

	Example 1-8	Example 1-9	Example 1-10	Example 1-11	Example 1-12	Example 1-13	Example 1-14	Example 1-15
Storage stability	o	o	o	o	o	o	o	o
Specular gloss	86	83	84	83	82	84	86	82
Tack free time (hr)	8	8	8	8	8	8	8	8
Area of dropped water stream (cm <sup>2</sup> )	12	26	17	12	23	19	13	27
Pollution resistance to rain streaking	4	5	5	4	5	5	4	5
Efflorescence resistance	o	o	o	o	o	o	o	o

Anti-staining agent P: To a reaction vessel equipped with a reflux condenser and stirring blades, 500 parts by weight of the Anti-staining agent O was added. Thereafter, 1.0 part by weight of tetramethoxysilane was gradually added dropwise to the resulting mixture with stirring. Then, the temperature was raised to 80°C and stirring was continued for 24 hours. Thereafter, the mixture was left standing still to cool to room temperature to give the Anti-staining agent P.